

ABSTRACT OF THE DISCLOSURE

The present disclosure describes DNA damage endonucleases which exhibit broad specificity with respect to the types of structural aberrations in double stranded DNA. These enzymes recognize double stranded DNA with distortions in structure, wherein the distortions result from photoproducts, alkylation, intercalation, abasic sites, mismatched base pairs, insertion deletion loops, cisplatin adducts and other types of base damage (for example, uracil resulting from cytosine deamination). The UVDE (Uve1p) of *Schizosaccharomyces pombe*, certain truncated forms of that UVDE (lacking from about 100 to about 250 amino acids of N-terminal sequence) and certain endonucleases from *Homo sapiens*, *Neurospora crassa*, *Bacillus subtilis*, *Bacillus anthracis*, *Methanococcus jannaschii*, and *Deinococcus radiodurans*. The present disclosure further provides methods for cleaving double stranded DNA having structural distortions as set forth herein using the exemplified endonucleases or their stable, functional truncated derivatives.